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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A system for cooling coated semiconductor substrates, said system comprising:
 - a chamber for receiving at least one coated semiconductor substrate;
 - a high pressure fluid reservoir that vents cooling fluid into the chamber;
 - a coupling coupled to the chamber and a the high pressure fluid reservoir for placing the chamber in fluid communication with the high pressure fluid reservoir, the coupling comprising a filter to exclude contaminate particles from the fluid;
 - an inlet valve attached to the coupling for controlling a flow of cooling fluid between the high pressure fluid reservoir and the chamber, wherein the pressure drop across the inlet valve affects the cooling fluid temperature and is at least about 10 bar depending on independent adjustments made to the inlet valve and outlet valve; and
 - a controller coupled to the inlet valve ~~for controlling that selectively controls~~ the inlet valve to optimize the pressure drop across the inlet valve separately and apart from the outlet valve by making adjustments to each independently of the other based on calculated temperature readings of the respective valves.
2. (Cancelled)
3. (Currently amended) The system of claim 2 1 wherein the pressure drop across the inlet valve is at least about 100 bar.
4. (Previously presented) The system of claim 1 wherein the controller controls the temperature of the cooling fluid at a point within the chamber.
5. (Currently amended) The system of claim 1 further comprising an outlet valve that releases at least a portion of the cooling fluid from the chamber as determined by the

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controller, wherein the controller incrementally opens or closes at least one of the inlet valve and the outlet valve to facilitate optimizing increased uniform cooling of the substrate for controlling a flow of cooling fluid out of the chamber, wherein the controller also controls the outlet valve.

6. (Currently amended) The system of claim 5 1 wherein the controller controls the rate of cooling fluid flow through the chamber and temperature of the cooling fluid as it enters the chamber to obtain an optimal pressure drop as the fluid enters the chamber.

7. (Previously presented) The system of claim 1 wherein cooling fluid entering the chamber from the reservoir substantially mixes with fluid already in the chamber before contacting the at least one semiconductor substrate.

8. (Currently amended) The system of claim 7 further comprising a baffle that is positioned with respect to the cooling fluid flow, wherein the cooling fluid flowing into the chamber is directed against the baffle before making contact with the substrate.

9. (Withdrawn) A system for cooling coated semiconductor substrates comprising:

means for cooling a fluid by at least about 10 °C through the Joule-Thompson effect; and

means for contacting the substrates with the cooled fluid.

10. (Withdrawn) The system of claim 9 comprising means for cooling the fluid by at least about 25 °C through the Joule-Thompson effect.

11. (Withdrawn) A method of cooling coated semiconductor substrates, comprising:

cooling a fluid by at least about 10 °C through the Joule-Thompson effect; and

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contacting the substrates with the cooled fluid.

12. (Withdrawn) The method of claim 11 wherein the temperature of the cooling fluid is varied during the cooling process.

13. (Withdrawn) The method of claim 11 wherein the substrates are in a chamber and the temperature and/or flow rate of the cooling fluid entering the chamber are varied to maintain an approximately constant difference between the average fluid temperature in the chamber and the average substrate temperature.

14. (Withdrawn) The method of claim 11 wherein the pressure in the chamber is maintained at or above about 2 bar.

15. (Withdrawn) The method of claim 11 wherein the cooling fluid is heated before it is cooled.

16. (Withdrawn) The method of claim 11 wherein the temperature within and among the substrates never varies by more than about 2 °C over the course of the cooling process.

17. (Withdrawn) The method of claim 11 wherein the substrates are cooled within a chamber within which the substrates were previously heated.

18. (Withdrawn) The method of claim 11 wherein the flow rate of the cooling fluid is varied during the cooling process.

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19. (Withdrawn) A method of cooling coated semiconductor substrates, comprising:
- heating a fluid to a temperature above ambient;
 - subsequently flowing the fluid into a chamber containing the substrates; and
 - cooling the substrates by contacting them with the fluid.
20. (Withdrawn) The method of claim 19 wherein the temperature of the fluid entering the chamber is varied as the substrates cool.
21. (Cancelled)
22. (New) A cooling system for coated semiconductor substrates comprising:
- means for receiving at least one coated semiconductor substrate;
 - means for venting cooling fluid into the chamber;
 - means for coupling the chamber and a the high pressure fluid reservoir to place the chamber in fluid communication with the high pressure fluid reservoir, the means for coupling comprising a means for excluding contaminate particles from the fluid;
 - in-flow means for selectively controlling an in-flow of cooling fluid between the high pressure fluid reservoir and the chamber, wherein the pressure drop across the in-flow means affects the cooling fluid temperature and is at least about 10 bar depending on independent adjustments made to the inlet valve and an out-flow means; and
 - controlling means that controls the in-flow means to optimize the pressure drop across the in-flow means separately and apart from the out-flow means by making adjustments to each independently of the other based on calculated temperature readings of the respective valves.
23. (New) The system of claim 22, wherein the out-flow means releases at least a portion of the cooling fluid from the chamber as determined by the controlling means, wherein the controlling means incrementally opens or closes at least one of the in-flow

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means and the out-flow means to facilitate optimizing increased uniform cooling of the substrate.

24. (New) The system of claim 22 wherein the controlling means controls the rate of cooling fluid flow through the chamber and temperature of the cooling fluid as it enters the chamber to obtain an optimal pressure drop as the fluid enters the chamber.

25. (New) A cooling system that facilitates enhanced uniform cooling of coated semiconductor substrates comprising:

a housing that receives a coated semiconductor substrate for cooling;

a high pressure fluid source that provides a flow of cooling fluid into the housing; and

a regulator that monitors temperature of the cooling fluid and selectively manipulates in-flow and out-flow gate open positions in an incremental manner depending on the temperature of the cooling fluid to optimize a pressure drop across the in-flow gate to facilitate uniform cooling across the substrate.

26. (New) The system of claim 25, further comprising a filter positioned in between the housing and the high pressure fluid source to remove contaminate particles from the cooling fluid to mitigate contaminate deposition on the coated substrate.

27. (New) The system of claim 25, further comprising a component that directs incoming cooling fluid entering the housing initially with existing cooling fluid in the housing before allowing the incoming fluid to contact the coated substrate to mitigate undesirable effects due to a temperature difference between the incoming cooling fluid and the coated substrate.